I. AMENDMENTS TO THE CLAIMS

1. (Currently amended) An electric power-generating device comprising:
a main input shaft ~~turned~~ rotated by a source of energy;

one or more sensors, an output thereof being sensor information ;

a synchronous generator selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said synchronous generator being operatively connected to said main input shaft, an output of said synchronous generator being AC electrical power;

a ~~passive~~ rectifier connected to said output of said synchronous generator, an output of said ~~passive~~ rectifier being DC electrical power;

an active inverter capable of regulating DC current, said active inverter having a first input, a second input, and an output, said first input being connected to said output of said ~~passive~~ rectifier~~, an output of said inverter being AC electrical power~~; and,

a control unit connected to said one or more sensors and to said second input of said active inverter, said control unit capable of ~~varying~~ causing said active inverter to regulate said DC current of said active inverter in accordance with said sensor information.

2. (Original) The electric power-generating device of claim 1 wherein said device includes a plurality of synchronous generators operatively connected to said main input shaft.

3. (Previously amended) The electric power-generating device of claim 2 wherein said control unit brings each generator of said plurality of synchronous generators online sequentially in the event of low energy conditions of said source of energy to improve system efficiency at low power.

4. (Previously amended) The electric power-generating device of claim 3 wherein said control unit alternates the sequence in which said control unit shifts the order in which said generators are brought online such that each generator receives ~~substantially~~ similar utilization.

5. (Currently amended) The electric power-generating device of claim 1 wherein electric power-generating device is a wind turbine that includes said generator~~,~~ and said ~~passive~~ rectifier, said wind turbine being located at the top of a tower and wherein said inverter is located at the bottom of said tower.

6. (Original) The electric power-generating device of claim 5 wherein a set of power cables conduct electrical power from the top of said tower to the bottom of said tower and wherein said power cables conduct DC electrical power.

7. (Original) The electric power-generating device of claim 6 wherein said set of power cables consist of two cables per generator.

8. (Currently amended) The electric power-generating device of claim 1 wherein said ~~passive~~ rectifier comprises a plurality of diodes that convert AC electrical power into DC electrical power.

9. (Currently amended) The electric power-generating device of claim 8 wherein said generator is a three-phase synchronous generator and wherein said ~~passive~~ rectifier comprises six diodes.

10. (Previously amended) The electric power-generating device of claim 1 wherein said control unit controls generator torque by regulating the current in said DC electrical power.

11. (Previously amended) The electric power-generating device of claim 10 wherein the voltage of said DC electrical power is measured and used as an input to said control unit.

12. (Previously amended) The electric power-generating device of claim 11 further comprising a band pass filter for said measured voltage of said DC electrical power ~~measurement~~ that is tuned to measure vibrations in mechanical portions of said electric power-generating device at a predetermined resonant frequency and wherein said control unit provides a generator torque signal to said inverter that cancels and dampens said vibrations.

13. (Previously amended) The electric power-generating device of claim 1 wherein said control unit measures vibrations in mechanical portions of said electric power-generating device and controls generator torque to actively dampen said vibrations.

14. (Previously amended) The electric power-generating device of claim 13 wherein said control unit measures said vibrations by measuring the voltage of said DC electrical power.

15. (Previously amended) The electric power-generating device of claim 14 further comprising a band pass filter in said control unit to filter said measured voltage of said DC electrical power to a predetermined frequency that corresponds to a mechanical resonance in said mechanical portions of said electric power-generating device.

16. (Currently amended) A fluid-flow turbine comprising:

a blade for converting fluid-flow power into mechanical power;

one or more sensors, an output thereof being sensor information ;

a plurality of synchronous generators selected from the group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said synchronous generators being operatively connected to said blade for converting said mechanical power into fixed-frequency utility-connected AC electrical power;

a ~~passive rectifier~~ plurality of rectifiers electrically connected to each of said synchronous generators for converting said AC electrical power of each synchronous generator into DC electrical power;

~~an inverter~~ a plurality of active inverters electrically connected to each of said ~~passive rectifiers~~ plurality of rectifiers to convert said DC electrical power of each of said plurality of rectifiers into AC electrical power, each active inverter capable of regulating DC electrical current; and,

a control unit connected to said one or more sensors and to said active inverters ~~inverter~~, said control unit capable of ~~varying~~ causing each of said active inverters to regulate said DC current of said active inverters ~~inverter~~ in accordance with said sensor information.

17. (Previously amended) The electric power-generating device of claim 16 wherein said control unit brings each generator online sequentially in low fluid-flow conditions to improve system efficiency at low power.

18. (Currently amended) The electric power-generating device of claim 17 wherein said control unit alternates the sequence in which said control unit ~~controller~~ shifts the order in which said generators are brought online such that each generator receives ~~substantially~~ similar utilization.

19. (Currently amended) A fluid-flow farm comprising:

a plurality of fluid-flow turbines each of which includes a synchronous generator coupled to a rectifier and an inverter, an output of said inverter being connected to a transformer, wherein reactive power control is fixed at said output of said inverter so that power factor is unity or set to provide a leading power factor that compensates for VAR of said transformer ~~converts fluid-flow power into AC electrical power at substantially unity power factor~~;

an electrical collection system ~~that~~ electrically ~~connects~~ connected to each of said fluid-flow turbines, said electrical collection system having an output, which is an aggregate output of said fluid-flow farm, said output being connected to a substation, wherein said electrical collection system is sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and,

a dynamically adjustable power factor controller at said substation for adjusting the power factor of ~~the~~ said aggregate output of said fluid-flow farm.

20. (Currently amended) A fluid-flow farm comprising:

a plurality of fluid-flow turbines each of which includes one or more synchronous generators, each coupled to a rectifier and an inverter, an output of said inverter being connected to a transformer, wherein VAR control is fixed at said output of said inverter such that a VAR load is set between and a leading power factor to compensate for the VAR of said external transformer and unity power factor , inclusive ~~converts fluid-flow power into AC electrical power at substantially unity power factor~~;

each one of said fluid-flow turbines comprising a blade which converts fluid-flow power into mechanical power, said one or more synchronous generators being selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said synchronous generators being operatively connected to said blade ~~to convert said~~

~~mechanical power into AC electrical power, a passive rectifier to convert said AC electrical power into DC electrical power, and an inverter to convert said DC electrical power into AC electrical power~~;

an electrical collection system ~~that~~ electrically ~~connects~~ connected to each of said fluid-flow turbines and to a substation, wherein said electrical collection system is sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and,

a dynamically adjustable power factor controller at said substation for adjusting the power factor of the aggregate output of said fluid-flow farm.

21. (Currently amended) An apparatus for generating electric power comprising:

first means for converting fluid-flow power into rotational mechanical power;

sensor means for providing sensor information ;

a plurality of synchronous generators selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said synchronous generator being connected to said first means for converting said mechanical power into AC electrical power;

rectifying means connected to said plurality of generators for rectifying outputs of said generators to thereby convert said AC electrical power of said generators into DC electrical power;

inverting means connected to said rectifying means for inverting said DC electrical power to thereby convert said DC electrical power to AC electrical power , said inverting means being capable of regulating DC electrical current ~~power~~; and,

control means connected to said sensing means and to said inverting means, for ~~varying~~ ~~said DC electrical power at said~~ ~~inverter~~ causing said inverting means to regulate said DC electrical current in accordance with variations in said sensor information.

22. (Previously amended) The apparatus of claim 21 further comprising:

further means in said control means for bringing each of said generators online sequentially in low fluid-flow conditions to improve system efficiency at low power.

23. (Currently amended) The apparatus of claim 22 wherein the order in which said generators are brought online is such that each generator receives ~~substantially~~ similar utilization.

24. (Currently amended) An apparatus for generating electric power comprising:

a transformer;

a plurality of fluid-flow turbines, each of which includes a synchronous generator coupled to a rectifier and an inverter, an output of said inverter being connected to said transformer, wherein reactive power control is fixed at said output of said inverter so that power factor is unity or set to provide a leading power factor that compensates for VAR of said transformer;

~~converts fluid-flow power into AC electrical power at substantially unity power factor;~~

a substation;

an electrical collection system ~~for~~ electrically connecting each of said fluid-flow turbines to ~~a~~ said substation;

~~wherein~~ said electrical collection system ~~is~~ being sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and

means at said substation for dynamically adjusting the power factor of the aggregate output of said plurality of fluid-flow turbines.

25. (Currently amended) A apparatus for generating electric power comprising:

a plurality of fluid-flow turbines, each of which utilizing a blade to drive synchronous generators selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent

magnet synchronous generators, said synchronous generators converting ~~that convert~~ fluid-flow power into AC electrical power at ~~substantially~~ unity power factor;

converting means associated with each turbine for converting said AC electrical power of said synchronous generators into DC electrical power;

means for inverting said DC electrical power of each said synchronous generators of a turbine to thereby convert said DC electrical power to AC electrical power;

an electrical collection system for electrically connecting each of said fluid-flow turbines to a substation wherein said electrical collection system is sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and,

means for dynamically adjusting the power factor of the aggregate output of said plurality of fluid-flow turbines at said substation.

26. (Original) The apparatus of claim 25 further comprising:

a number of towers, one for each of said plurality of turbines;

each turbine and an associated converting means being located on top of one of said towers; and,

said means for inverting being located at a bottom of said tower.

27. (Currently amended) The apparatus of claim 26 further comprising:
means for conducting DC electrical power ~~electrical power~~ from said converting means at said top of said tower to said inverting means at said bottom of said tower.

28. (Currently amended) A method of generating electric power comprising steps of:

A. converting fluid-flow power into mechanical power;

B. providing sensor information;

C. utilizing a plurality of generators selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators to convert said mechanical

power into AC electrical power;

D. rectifying outputs of said generators to thereby convert said AC electrical power of said generators into DC electrical power; ~~and~~

E. inverting said DC electrical power at an inverter to thereby convert said DC electrical power to AC electrical power; and,

F. ~~varying~~ regulating ~~said~~ DC electrical current ~~power~~ at said inverter in accordance with variations in said sensor information.

29. (Original) The method of claim 28 further comprising a step of:

E. bringing each of said generators online sequentially in low fluid-flow conditions to improve system efficiency at low power.

30. (Currently amended) The method of claim 29 wherein in said step E the order in which said generators are brought online is such that each generator receives ~~substantially~~ similar utilization.

31. (Currently amended) A method of generating electric power comprising steps of:

A. providing a plurality of fluid-flow turbines that include synchronous generators selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said generators converting ~~, each of which fluid-flow turbine converts~~ fluid-flow power into AC electrical power at ~~substantially~~ ~~unity~~ a power factor fixed between a leading power factor to compensate for the VAR of an external transformer and a unity power factor , inclusive;

B. electrically connecting each of said fluid-flow turbines via an electrical collection system to a substation wherein said electrical collection system is sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and

C. dynamically adjusting the power factor of the aggregate output of said plurality of fluid-flow turbines at said substation.

32. (Currently amended) A method of generating electric power comprising steps of:

A. providing a plurality of fluid-flow turbines, each of which utilizing a blade to drive synchronous generators selected from a group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators, said generators converting ~~that convert~~ fluid-flow power into AC electrical power at ~~substantially~~ unity power factor;

B. rectifying outputs of each said synchronous generators of a turbine to thereby convert said AC electrical power of said synchronous generators into DC electrical power;

C. inverting said DC electrical power of each said synchronous generators of a turbine to thereby convert said DC electrical power to AC electrical power;

D. electrically connecting each of said fluid-flow turbines via an electrical collection system to a substation wherein said electrical collection system is sized for operation of said fluid-flow turbines at ~~substantially~~ unity power factor; and,

E. dynamically adjusting the power factor of the aggregate output of said plurality of fluid-flow turbines at said substation.

33. (Original) The method of claim 32 wherein:

said step A of providing a plurality of fluid-flow turbines includes the step of providing a plurality of towers with each one of said turbines on top of one of said towers;

said step B of rectifying outputs of each said generators is performed at said top of said one tower; and,

said step C of inverting said DC electrical power of each said synchronous generators of a turbine to thereby convert said DC electrical power to AC electrical power is performed at a bottom of said one tower.

34. (Previously amended) The method of claim 33 further comprising a step of:

F. conducting DC electrical power from said top of one tower to said bottom of said one tower prior to said step C of inverting said DC electrical power of each said synchronous generators of a turbine.

35. (New) A variable speed wind turbine comprising:

a turbine rotor including at least one blade mounted on a rotatable shaft;

a synchronous generator selected from the group consisting of wound field synchronous generators wherein an exciter field is excited with a constant current and permanent magnet synchronous generators,

said synchronous generator being coupled to said turbine shaft for rotation therewith;

a sensor, an output of which is sensor information;

a power converter including an active inverter having switches that can be activated in response to inverter current commands in such a way as to vary DC current for phases of said generator; and,

a controller coupled to said sensor and to said inverter , an output of said controller being an inverter current command related to required generator torque.

36 (New) The apparatus of claim 35 wherein:

said inverter current command commands required generator torque based on rotor speed and power output of said inverter.